

Exploring the Extreme			
2000 Science			
Academic Standards			
<b>Indiana Science</b>			
<b>Grade K</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	
Finding the Center of Gravity Using Rulers	IN	SCI.K.K.1.1	Raise questions about the natural world.
Finding the Center of Gravity Using Plumb Lines	IN	SCI.K.K.1.1	Raise questions about the natural world.
Changing the Center of Gravity Using Moment Arms	IN	SCI.K.K.1.1	Raise questions about the natural world.
Exploring the Extreme			
2000 Science			
Academic Standards			
<b>Indiana Science</b>			
<b>Grade 1</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	
Finding the Center of Gravity Using Rulers	IN	SCI.1.1.1.4	Use tools, such as rulers and magnifiers, to investigate the world and make observations.
Finding the Center of Gravity Using Rulers	IN	SCI.1.1.2.1	Use whole numbers, up to 100, in counting, identifying, measuring, and describing objects and experiences.
Finding the Center of Gravity Using Rulers	IN	SCI.1.1.2.2	Use sums and differences of single digit numbers in investigations and judge the reasonableness of the answers.
Finding the Center of Gravity Using Rulers	IN	SCI.1.1.6.1	Observe and describe that models, such as toys, are like the real things in some ways but different in others.
Finding the Center of Gravity Using Plumb Lines	IN	SCI.1.1.2.1	Use whole numbers, up to 100, in counting, identifying, measuring, and describing objects and experiences.
Finding the Center of Gravity Using Plumb Lines	IN	SCI.1.1.2.2	Use sums and differences of single digit numbers in investigations and judge the reasonableness of the answers.
Finding the Center of Gravity Using Plumb Lines	IN	SCI.1.1.6.1	Observe and describe that models, such as toys, are like the real things in some ways but different in others.
Changing the Center of Gravity Using Moment Arms	IN	SCI.1.1.1.4	Use tools, such as rulers and magnifiers, to investigate the world and make observations.
Changing the Center of Gravity Using Moment Arms	IN	SCI.1.1.2.1	Use whole numbers, up to 100, in counting, identifying, measuring, and describing objects and experiences.
Changing the Center of Gravity Using Moment Arms	IN	SCI.1.1.2.2	Use sums and differences of single digit numbers in investigations and judge the reasonableness of the answers.

<b>Exploring the Extreme</b>			
<b>2000 Science</b>			
<b>Academic Standards</b>			
<b>Indiana Science</b>			
<b>Grade 2</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	
Finding the Center of Gravity Using Rulers	IN	SCI.2.2.1.2	Use tools — such as thermometers, magnifiers, rulers, or balances — to gain more information about objects.
Finding the Center of Gravity Using Rulers	IN	SCI.2.2.1.5	Demonstrate the ability to work with a team but still reach and communicate one's own conclusions about findings.
Finding the Center of Gravity Using Rulers	IN	SCI.2.2.1.6	Use tools to investigate, observe, measure, design, and build things.
Finding the Center of Gravity Using Rulers	IN	SCI.2.2.5.1	Recognize and explain that, in measuring, there is a need to use numbers between whole numbers, such as 2½ centimeters.
Finding the Center of Gravity Using Rulers	IN	SCI.2.2.6.2	Observe and explain that models may not be the same size, may be missing some details, or may not be able to do all of the same things as the real things.
Finding the Center of Gravity Using Rulers	IN	SCI.2.2.6.3	Describe that things can change in different ways, such as in size, weight, color, age, and movement. Investigate that some small changes can be detected by taking measurements.
Finding the Center of Gravity Using Plumb Lines	IN	SCI.2.2.1.6	Use tools to investigate, observe, measure, design, and build things.
Finding the Center of Gravity Using Plumb Lines	IN	SCI.2.2.2.3	Estimate and measure capacity using cups and pints.
Finding the Center of Gravity Using Plumb Lines	IN	SCI.2.2.5.1	Recognize and explain that, in measuring, there is a need to use numbers between whole numbers, such as 2½ centimeters.
Finding the Center of Gravity Using Plumb Lines	IN	SCI.2.2.6.2	Observe and explain that models may not be the same size, may be missing some details, or may not be able to do all of the same things as the real things.
Finding the Center of Gravity Using Plumb Lines	IN	SCI.2.2.6.3	Describe that things can change in different ways, such as in size, weight, color, age, and movement. Investigate that some small changes can be detected by taking measurements.
Changing the Center of Gravity Using Moment Arms	IN	SCI.2.2.1.2	Use tools — such as thermometers, magnifiers, rulers, or balances — to gain more information about objects.
Changing the Center of Gravity Using Moment Arms	IN	SCI.2.2.1.5	Demonstrate the ability to work with a team but still reach and communicate one's own conclusions about findings.

Changing the Center of Gravity Using Moment Arms	IN	SCI.2.2.1.6	Use tools to investigate, observe, measure, design, and build things.
Changing the Center of Gravity Using Moment Arms	IN	SCI.2.2.6.3	Describe that things can change in different ways, such as in size, weight, color, age, and movement. Investigate that some small changes can be detected by taking measurements.
<b>Exploring the Extreme</b>			
<b>2000 Science</b>			
<b>Academic Standards</b>			
<b>Indiana Science</b>			
<b>Grade 3</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	
Finding the Center of Gravity Using Rulers	IN	SCI.3.3.1.1	Recognize and explain that when a scientific investigation is repeated, a similar result is expected.
Finding the Center of Gravity Using Rulers	IN	SCI.3.3.1.2	Participate in different types of guided scientific investigations, such as observing objects and events and collecting specimens for analysis.
Finding the Center of Gravity Using Rulers	IN	SCI.3.3.1.4	Discuss the results of investigations and consider the explanations of others.
Finding the Center of Gravity Using Rulers	IN	SCI.3.3.1.5	Demonstrate the ability to work cooperatively while respecting the ideas of others and communicating one's own conclusions about findings.
Finding the Center of Gravity Using Rulers	IN	SCI.3.3.2.4	Appropriately use simple tools, such as clamps, rulers, scissors, hand lenses, and other technology, such as calculators and computers, to help solve problems.
Finding the Center of Gravity Using Plumb Lines	IN	SCI.3.3.1.2	Participate in different types of guided scientific investigations, such as observing objects and events and collecting specimens for analysis.
Changing the Center of Gravity Using Moment Arms	IN	SCI.3.3.1.4	Discuss the results of investigations and consider the explanations of others.
Changing the Center of Gravity Using Moment Arms	IN	SCI.3.3.1.5	Demonstrate the ability to work cooperatively while respecting the ideas of others and communicating one's own conclusions about findings.
Changing the Center of Gravity Using Moment Arms	IN	SCI.3.3.2.6	Make sketches and write descriptions to aid in explaining procedures or ideas.
Changing the Center of Gravity Using Moment Arms	IN	SCI.3.3.5.2	Observe that and describe how some measurements are likely to be slightly different, even if what is being measured stays the same.

Changing the Center of Gravity Using Moment Arms	IN	SCI.3.3.5.3	Construct tables and graphs to show how values of one quantity are related to values of another.
<b>Exploring the Extreme</b>			
<b>2000 Science</b>			
<b>Academic Standards</b>			
<b>Indiana Science</b>			
<b>Grade 4</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	
Finding the Center of Gravity Using Rulers	IN	SCI.4.4.1.1	Observe and describe that scientific investigations generally work the same way in different places.
Finding the Center of Gravity Using Rulers	IN	SCI.4.4.1.5	Demonstrate how measuring instruments, such as microscopes, telescopes, and cameras, can be used to gather accurate information for making scientific comparisons of objects and events. Note that measuring instruments, such as rulers, can also be used for designing and constructing things that will work properly.
Finding the Center of Gravity Using Rulers	IN	SCI.4.4.2.5	Write descriptions of investigations, using observations and other evidence as support for explanations.
Changing the Center of Gravity Using Moment Arms	IN	SCI.4.4.1.3	Explain that clear communication is an essential part of doing science since it enables scientists to inform others about their work, to expose their ideas to evaluation by other scientists, and to allow scientists to stay informed about scientific discoveries around the world.
Changing the Center of Gravity Using Moment Arms	IN	SCI.4.4.1.4	Describe how people all over the world have taken part in scientific investigation for many centuries.
Changing the Center of Gravity Using Moment Arms	IN	SCI.4.4.2.5	Write descriptions of investigations, using observations and other evidence as support for explanations.
Changing the Center of Gravity Using Moment Arms	IN	SCI.4.4.6.3	Recognize that and describe how changes made to a model can help predict how the real thing can be altered.
<b>Exploring the Extreme</b>			
<b>2000 Science</b>			
<b>Academic Standards</b>			
<b>Indiana Science</b>			
<b>Grade 5</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	

Jet Propulsion	IN	SCI.5.5.3.8	Investigate, observe, and describe that heating and cooling cause changes in the properties of materials, such as water turning into steam by boiling and water turning into ice by freezing. Notice that many kinds of changes occur faster at higher temperatures.
Jet Propulsion	IN	SCI.5.5.5.8	Realize and explain that predictions may be more accurate if they are based on large collections of objects or events.
Jet Propulsion	IN	SCI.5.5.5.10	Explain the danger in using only a portion of the data collected to describe the whole.
Vectoring	IN	SCI.5.5.1.1	Recognize and describe that results of similar scientific investigations may turn out differently because of inconsistencies in methods, materials, and observations.
Vectoring	IN	SCI.5.5.5.7	Explain that predictions can be based on what is known about the past, assuming that conditions are similar.
Vectoring	IN	SCI.5.5.5.8	Realize and explain that predictions may be more accurate if they are based on large collections of objects or events.
Vectoring	IN	SCI.5.5.5.10	Explain the danger in using only a portion of the data collected to describe the whole.
Fuel Efficiency	IN	SCI.5.5.3.11	Investigate and describe that changes in speed or direction of motion of an object are caused by forces. Understand that the greater the force, the greater the change in motion and the more massive an object, the less effect a given force will have.
<b>Exploring the Extreme</b>			
<b>2000 Science</b>			
<b>Academic Standards</b>			
<b>Indiana Science</b>			
<b>Grade 6</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	
Jet Propulsion	IN	SCI.6.6.1.2	Give examples of different ways scientists investigate natural phenomena and identify processes all scientists use, such as collection of relevant evidence, the use of logical reasoning, and the application of imagination in devising hypotheses and explanations, in order to make sense of the evidence.
Vectoring	IN	SCI.6.6.1.6	Explain that computers have become invaluable in science because they speed up and extend people's ability to collect, store, compile, and analyze data; prepare research reports; and share data and ideas with investigators all over the world.

Vectoring	IN	SCI.6.6.1.7	Explain that technology is essential to science for such purposes as access to outer space and other remote locations, sample collection and treatment, measurement, data collection and storage, computation, and communication of information.
Vectoring	IN	SCI.6.6.5.6	Predict the frequency of the occurrence of future events based on data.
Center of Gravity, Pitch, Yaw	IN	SCI.6.6.1.7	Explain that technology is essential to science for such purposes as access to outer space and other remote locations, sample collection and treatment, measurement, data collection and storage, computation, and communication of information.
Center of Gravity, Pitch, Yaw	IN	SCI.6.6.7.2	Use models to illustrate processes that happen too slowly, too quickly, or on too small a scale to observe directly, or are too vast to be changed deliberately, or are potentially dangerous.
Fuel Efficiency	IN	SCI.6.6.1.7	Explain that technology is essential to science for such purposes as access to outer space and other remote locations, sample collection and treatment, measurement, data collection and storage, computation, and communication of information.
Fuel Efficiency	IN	SCI.6.6.2.6	Read simple tables and graphs produced by others and describe in words what they show.
Fuel Efficiency	IN	SCI.6.6.5.2	Evaluate the precision and usefulness of data based on measurements taken.
<b>Exploring the Extreme</b>			
<b>2000 Science</b>			
<b>Academic Standards</b>			
<b>Indiana Science</b>			
<b>Grade 7</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	
Jet Propulsion	IN	SCI.7.7.1.2	Explain that what people expect to observe often affects what they actually do observe and provide an example of a solution to this problem.
Jet Propulsion	IN	SCI.7.7.1.3	Explain why it is important in science to keep honest, clear, and accurate records.
Jet Propulsion	IN	SCI.7.7.1.4	Describe that different explanations can be given for the same evidence, and it is not always possible to tell which one is correct without further inquiry.

Jet Propulsion	IN	SCI.7.7.7.2	Use different models to represent the same thing, noting that the kind of model and its complexity should depend on its purpose.
Vectoring	IN	SCI.7.7.1.4	Describe that different explanations can be given for the same evidence, and it is not always possible to tell which one is correct without further inquiry.
Vectoring	IN	SCI.7.7.7.2	Use different models to represent the same thing, noting that the kind of model and its complexity should depend on its purpose.
Fuel Efficiency	IN	SCI.7.7.3.17	Investigate that an unbalanced force, acting on an object, changes its speed or path of motion or both, and know that if the force always acts toward the same center as the object moves, the object's path may curve into an orbit around the center.
Fuel Efficiency	IN	SCI.7.7.7.2	Use different models to represent the same thing, noting that the kind of model and its complexity should depend on its purpose.
<b>Exploring the Extreme</b>			
<b>2000 Science</b>			
<b>Academic Standards</b>			
<b>Indiana Science</b>			
<b>Grade 8</b>			
<b>Activity/Lesson</b>	<b>State</b>	<b>Standards</b>	
Jet Propulsion	IN	SCI.8.8.1.1	Recognize that and describe how scientific knowledge is subject to modification as new information challenges prevailing theories and as a new theory leads to looking at old observations in a new way.
Jet Propulsion	IN	SCI.8.8.1.2	Recognize and explain that some matters cannot be examined usefully in a scientific way.
Jet Propulsion	IN	SCI.8.8.7.3	Use technology to assist in graphing and with simulations that compute and display results of changing factors in models.
Vectoring	IN	SCI.8.8.1.2	Recognize and explain that some matters cannot be examined usefully in a scientific way.
Center of Gravity, Pitch, Yaw	IN	SCI.8.8.1.6	Identify the constraints that must be taken into account as a new design is developed, such as gravity and the properties of the materials to be used.
Center of Gravity, Pitch, Yaw	IN	SCI.8.8.3.9	Demonstrate, using drawings and models, the movement of atoms in a solid, liquid, and gaseous state. Explain that atoms and molecules are perpetually in motion.

Center of Gravity, Pitch, Yaw	IN	SCI.8.8.5.1	Understand and explain that a number must be written with an appropriate number of significant figures (determined by the measurements from which the number is derived).
Center of Gravity, Pitch, Yaw	IN	SCI.8.8.7.3	Use technology to assist in graphing and with simulations that compute and display results of changing factors in models.
Fuel Efficiency	IN	SCI.8.8.1.2	Recognize and explain that some matters cannot be examined usefully in a scientific way.
Fuel Efficiency	IN	SCI.8.8.3.9	Demonstrate, using drawings and models, the movement of atoms in a solid, liquid, and gaseous state. Explain that atoms and molecules are perpetually in motion.
Fuel Efficiency	IN	SCI.8.8.7.3	Use technology to assist in graphing and with simulations that compute and display results of changing factors in models.